

ipd4000stdlltTES-10

Defense Information Infrastructure (DII)

Common Operating Environment (COE)

**Software Test Description (STD) and Software Test Report (STR)
for the METOC Latitude-Longitude-Time (LLT) API and
Database Segments (MALLT and MDLLT)**

Preliminary Release

Document Version 4.0

15 May 1998

**Prepared for:
Naval Research Laboratory
Marine Meteorology Division
Monterey, CA**

**Prepared by:
Integrated Performance Decisions, Inc.
Middletown, RI**

(This page intentionally left blank.)

Table of Contents

1	SCOPE.....	1
1.1	Identification	1
1.2	System Overview.....	1
2	REFERENCED DOCUMENTS.....	5
2.1	Government Documents.....	5
2.2	Non-Government Documents.....	6
3	TEST PREPARATION.....	7
3.1	MALLT and MDLLT Segments Test Preparation	7
3.1.1	Hardware Preparation	7
3.1.2	Software Preparation.....	7
3.1.2.1	Using the Test Driver Programs.....	8
3.1.2.2	Command Line Arguments.....	9
3.1.2.3	Test Input Data.....	9
3.1.2.4	Test Output Data.....	10
3.1.3	Other Preparations.....	11
3.1.3.1	Establishing an xterm or console window on the HP-UX and NT platforms	11
3.1.3.2	Establishing a console window for a DII COE 3.1 HP-UX System.....	11
3.1.3.3	Establishing a console window for a Windows NT 4.0 System	12
3.1.3.4	Setting the Environmental Variable to Run the Dynamic Library API.....	12
3.1.3.5	Reviewing the Content of the Database using dbaccess.....	13
4	TEST DESCRIPTIONS	15
4.1	MDLLT and MALLT Segment Installation Test	15
4.1.1	MDLLT Database Segment Installation Test Case.....	15
4.1.1.1	Prerequisite Conditions	15
4.1.1.2	Test Inputs	15
4.1.1.3	Expected Test Results.....	15
4.1.1.4	Criteria for Evaluating Results	15
4.1.1.5	Test Procedure.....	15
4.1.1.6	Assumptions and Constraints.....	16
4.1.2	MALLT API Segment HP Installation Test Case.....	16
4.1.2.1	Prerequisite Conditions	16
4.1.2.2	Test Inputs	16
4.1.2.3	Expected Test Results.....	16
4.1.2.4	Criteria for Evaluating Results	16
4.1.2.5	Test Procedure.....	16
4.1.2.6	Assumptions and Constraints.....	17
4.1.3	MALLT API Segment Windows NT Installation Test Case.....	17
4.1.3.1	Prerequisite Conditions	17
4.1.3.2	Test Inputs	17
4.1.3.3	Expected Test Results.....	17

4.1.3.4	Criteria for Evaluating Results	17
4.1.3.5	Test Procedure.....	18
4.1.3.6	Assumptions and Constraints	18
4.2	Latitude-Longitude-Time Observation Data Ingest Test.....	19
4.2.1	Ingest Latitude-Longitude-Time Observation Test.....	19
4.2.1.1	Prerequisite Conditions	19
4.2.1.2	Test Inputs	19
4.2.1.3	Expected Test Results.....	20
4.2.1.4	Criteria for Evaluating Results	20
4.2.1.5	Test Procedure.....	20
4.2.1.6	Assumptions and Constraints	20
4.2.2	Multi User Ingest Latitude-Longitude-Time Observation Test Case	20
4.2.2.1	Prerequisite Conditions	21
4.2.2.2	Test Inputs	21
4.2.2.3	Expected Test Results.....	21
4.2.2.4	Criteria for Evaluating Results	22
4.2.2.5	Test Procedure.....	22
4.2.2.6	Assumptions and Constraints	22
4.3	Latitude-Longitude-Time Observation Get By ID Test.....	23
4.3.1	Retrieve Latitude-Longitude-Time Observations using Get By ID	23
4.3.1.1	Prerequisite Conditions	23
4.3.1.2	Test Inputs	24
4.3.1.3	Expected Test Results.....	24
4.3.1.4	Criteria for Evaluating Results	24
4.3.1.5	Test Procedure.....	24
4.3.1.6	Assumptions and Constraints	24
4.3.2	Retrieve Latitude-Longitude-Time Observation using Get By ID Error Test.....	24
4.3.2.1	Prerequisite Conditions	25
4.3.2.2	Test Inputs	25
4.3.2.3	Expected Test Results.....	25
4.3.2.4	Criteria for Evaluating Results	25
4.3.2.5	Test Procedure.....	26
4.3.2.6	Assumptions and Constraints	26
4.3.3	Simultaneous Retrieve of a Latitude-Longitude-Time Observation using the Get By ID Test Case	26
4.3.3.1	Prerequisite Conditions	26
4.3.3.2	Test Inputs	27
4.3.3.3	Expected Test Results.....	27
4.3.3.4	Criteria for Evaluating Results	27
4.3.3.5	Test Procedure.....	27
4.3.3.6	Assumptions and Constraints	27
4.4	Latitude-Longitude-Time Observation Get By Query	28

4.4.1	Retrieve Latitude-Longitude-Time Observations using the Get By Query Test Case.....	28
4.4.1.1	Prerequisite Conditions	28
4.4.1.2	Test Inputs	29
4.4.1.3	Expected Test Results.....	29
4.4.1.4	Criteria for Evaluating Results	29
4.4.1.5	Test Procedure.....	29
4.4.1.6	Assumptions and Constraints	29
4.4.2	Retrieve Latitude-Longitude-Time Observations using Get By Query Test Case, Geographic Area	29
4.4.2.1	Prerequisite Conditions	30
4.4.2.2	Test Inputs	30
4.4.2.3	Expected Test Results.....	30
4.4.2.4	Criteria for Evaluating Results	31
4.4.2.5	Test Procedure.....	31
4.4.2.6	Assumptions and Constraints	31
4.4.3	Retrieve Latitude-Longitude-Time Observations using Get By Query Test Case, Year 2000 (Y2K)	31
4.4.3.1	Prerequisite Conditions	31
4.4.3.2	Test Inputs	32
4.4.3.3	Expected Test Results.....	32
4.4.3.4	Criteria for Evaluating Results	32
4.4.3.5	Test Procedure.....	32
4.4.3.6	Assumptions and Constraints	33
4.4.4	Retrieve Latitude-Longitude-Time Observations using Get Test Case, Wild Card	33
4.4.4.1	Prerequisite Conditions	33
4.4.4.2	Test Inputs	33
4.4.4.3	Expected Test Results.....	34
4.4.4.4	Criteria for Evaluating Results	34
4.4.4.5	Test Procedure.....	34
4.4.4.6	Assumptions and Constraints	34
4.4.5	Simultaneous Retrieve Latitude-Longitude-Time Observations using Get By Query	34
4.4.5.1	Prerequisite Conditions	34
4.4.5.2	Test Inputs	35
4.4.5.3	Expected Test Results.....	35
4.4.5.4	Criteria for Evaluating Results	35
4.4.5.5	Test Procedure.....	35
4.4.5.6	Assumptions and Constraints	36
4.5	Latitude-Longitude-Time Observation Catalog List Test.....	37
4.5.1	Retrieve Latitude-Longitude-Time Observations Catalog List using Catalog Test	37
4.5.1.1	Prerequisite Conditions	37
4.5.1.2	Test Inputs	37
4.5.1.3	Expected Test Results.....	38

4.5.1.4	Criteria for Evaluating Results	38
4.5.1.5	Test Procedure.....	38
4.5.1.6	Assumptions and Constraints	38
4.5.2	Retrieve Latitude-Longitude-Time Observations using the Catalog, Geographic Area Test Case	38
4.5.2.1	Prerequisite Conditions	39
4.5.2.2	Test Inputs	39
4.5.2.3	Expected Test Results.....	39
4.5.2.4	Criteria for Evaluating Results	39
4.5.2.5	Test Procedure.....	40
4.5.2.6	Assumptions and Constraints	40
4.5.3	Retrieve Latitude-Longitude-Time Observations using the Get Catalog Test Case, Year 2000 (Y2K)	40
4.5.3.1	Prerequisite Conditions	40
4.5.3.2	Test Inputs	41
4.5.3.3	Expected Test Results.....	41
4.5.3.4	Criteria for Evaluating Results	41
4.5.3.5	Test Procedure.....	41
4.5.3.6	Assumptions and Constraints	42
4.5.4	Retrieve Latitude-Longitude-Time Observations using the Catalog Test Case, Wild Card.....	42
4.5.4.1	Prerequisite Conditions	42
4.5.4.2	Test Inputs	43
4.5.4.3	Expected Test Results.....	43
4.5.4.4	Criteria for Evaluating Results	43
4.5.4.5	Test Procedure.....	43
4.5.4.6	Assumptions and Constraints	43
4.5.5	Retrieve Latitude-Longitude-Time Observations using the Catalog Error Test	43
4.5.5.1	Prerequisite Conditions	44
4.5.5.2	Test Inputs	44
4.5.5.3	Expected Test Results.....	44
4.5.5.4	Criteria for Evaluating Results	44
4.5.5.5	Test Procedure.....	45
4.5.5.6	Assumptions and Constraints	45
4.5.6	Simultaneous Retrieve Latitude-Longitude-Time Observations using the Catalog Test.....	45
4.5.6.1	Prerequisite Conditions	45
4.5.6.2	Test Inputs	46
4.5.6.3	Expected Test Results.....	46
4.5.6.4	Criteria for Evaluating Results	46
4.5.6.5	Test Procedure.....	46
4.5.6.6	Assumptions and Constraints	46

4.6	Updating an Existing Latitude-Longitude-Time Observation Test.....	47
4.6.1	Updating an Existing Latitude-Longitude-Time Observation Test	47
4.6.1.1	Prerequisite Conditions	47
4.6.1.2	Test Inputs	48
4.6.1.3	Expected Test Results.....	48
4.6.1.4	Criteria for Evaluating Results	48
4.6.1.5	Test Procedure.....	48
4.6.1.6	Assumptions and Constraints	48
4.6.2	Updating an Existing Latitude-Longitude-Time Observation using Erroneous Data Test.....	48
4.6.2.1	Prerequisite Conditions	49
4.6.2.2	Test Inputs	49
4.6.2.3	Expected Test Results.....	49
4.6.2.4	Criteria for Evaluating Results	49
4.6.2.5	Test Procedure.....	50
4.6.2.6	Assumptions and Constraints	50
4.6.3	Simultaneous Updating of Existing Latitude-Longitude-Time Observations Test	50
4.6.3.1	Prerequisite Conditions	50
4.6.3.2	Test Inputs	51
4.6.3.3	Expected Test Results.....	51
4.6.3.4	Criteria for Evaluating Results	51
4.6.3.5	Test Procedure.....	51
4.6.3.6	Assumptions and Constraints	51
4.7	Deleting a Latitude-Longitude-Time Observation Test	52
4.7.1	Deleting a Latitude-Longitude-Time Observation Test.....	52
4.7.1.1	Prerequisite Conditions	52
4.7.1.2	Test Inputs	53
4.7.1.3	Expected Test Results.....	53
4.7.1.4	Criteria for Evaluating Results	53
4.7.1.5	Test Procedure.....	53
4.7.1.6	Assumptions and Constraints	53
4.7.2	Deleting a Latitude-Longitude-Time Observation using the Delete By ID Error Test.....	53
4.7.2.1	Prerequisite Conditions	54
4.7.2.2	Test Inputs	54
4.7.2.3	Expected Test Results.....	54
4.7.2.4	Criteria for Evaluating Results	54
4.7.2.5	Test Procedure.....	55
4.7.2.6	Assumptions and Constraints	55
4.7.3	Simultaneous Deleting a Latitude-Longitude-Time Observation using the Delete By ID Test.....	55
4.7.3.1	Prerequisite Conditions	55
4.7.3.2	Test Inputs	56

4.7.3.3	Expected Test Results.....	56
4.7.3.4	Criteria for Evaluating Results	56
4.7.3.5	Test Procedure.....	56
4.7.3.6	Assumptions and Constraints	56
5	REQUIREMENTS TRACEABILITY	57
6	NOTES.....	58
6.1	Glossary of Acronyms	58
 Appendix A - Latitude-Longitude-Time Observation Segment Test Inputs		A-1
 Appendix B - Latitude-Longitude-Time Observation Segment Expects and Report of Test Results		B-1

List of Tables

3-1	Textual Observation Test Drivers	8
3-2	Textual Observation Command Line Arguments.....	9
3-3	Test Driver Subdirectories and Names.....	9

List of Figures

1	TESS(NC) METOC Database Conceptual Organization	3
---	---	---

1 SCOPE

1.1 Identification

This Software Description Document (STD) and Software Test Report (STR) describes the test procedures and the report of the results used to verify the Textual Observation API Segment (MALLT), and the Textual Observation Database Segment (MDLLT), Versions 4.1 series, of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database. The MALLT and MDLLT segment provides APIs and a database for the storage, retrieval, and manipulation of METOC point observations. This software is designed to run under the Defense Information Infrastructure (DII) Common Operating Environment (COE), release 3.1, on a Hewlett-Packard computer running HP-UX 10.20 or a personal computer running the Microsoft Windows NT 4.0 operating system with Service Pack 3.

1.2 System Overview

The APIs described in this document form a portion of the METOC Database component of the TESS(NC) Program (NITES Version I). On 29 October 1996, the Oceanographer of the Navy issued a TESS Program Policy statement in letter 3140 Serial 961/6U570953, modifying the Program by calling for five seamless software versions which are Defense Information Infrastructure (DII) Common Operating Environment (COE) compliant, preferably, to level 5.

The five versions are:

- NITES Version I The local data fusion center and principal METOC analysis and forecast system. (TESS(NC))
- NITES Version II The subsystem on the JMCIS or GCCS systems (NITES/JMS)
- NITES Version III The unclassified aviation forecast, briefing and display subsystem tailored to Naval METOC shore activities (currently satisfied by the Meteorological Integrated Data Display System (MIDDS))
- NITES Version IV The Portable subsystem composed of independent PCs/workstations and modules for forecaster, satellite, communications, and IC4ISR functions (currently the Interim Mobile Oceanographic Support System (IMOSS))
- NITES Version V Foreign Military Sales (currently satisfied by the Allied Environmental Support System (AESS))

NITES I acquires and assimilates various METOC data for use by US Navy and Marine Corps weather forecasters and tactical planners. NITES I provides these users METOC data, products, and applications necessary to support the warfighter in tactical operations and decision making. NITES I provides METOC data and products to NITES I and NITES II applications, as well as non-TESS(NC) systems requiring METOC data, in a heterogeneous networked computing environment.

The TESS(NC) Concept of Operations and system architecture require that the METOC Database be distributed both in terms of application access to METOC data and products and in terms of physical location of the data repositories. The organizational structure of the database is influenced by these requirements and the components of this distributed database are described below.

In accordance with DII COE database concepts, the METOC Database is composed of six DII COE compliant *shared database* segments. Associated with each shared database segment is an API segment. The segments are arranged by data type as follows:

<u>Data Type</u>	<u>Data Segment</u>	<u>API Segment</u>
Grid Fields	MDGRID	MAGRID
Latitude-longitude-time (LLT) Observations	MDLLT	MALLT
Textual Observations and Bulletins	MDTXT	MATXT
Remotely Sensed Data	MDREM	MAREM
Imagery and Product Data	MDIMG	MAIMG
Climatology Data	MDCLIM	MACLIM

A typical client-server installation is depicted in Figure 1 on the next page. This shows the shared database segments residing on a DII COE SHADE database server, with a NITES I or II client machine hosting the API segments. Communication between API segments and shared database segments is accomplished over the network using ANSI-standard Structured Query Language (SQL).

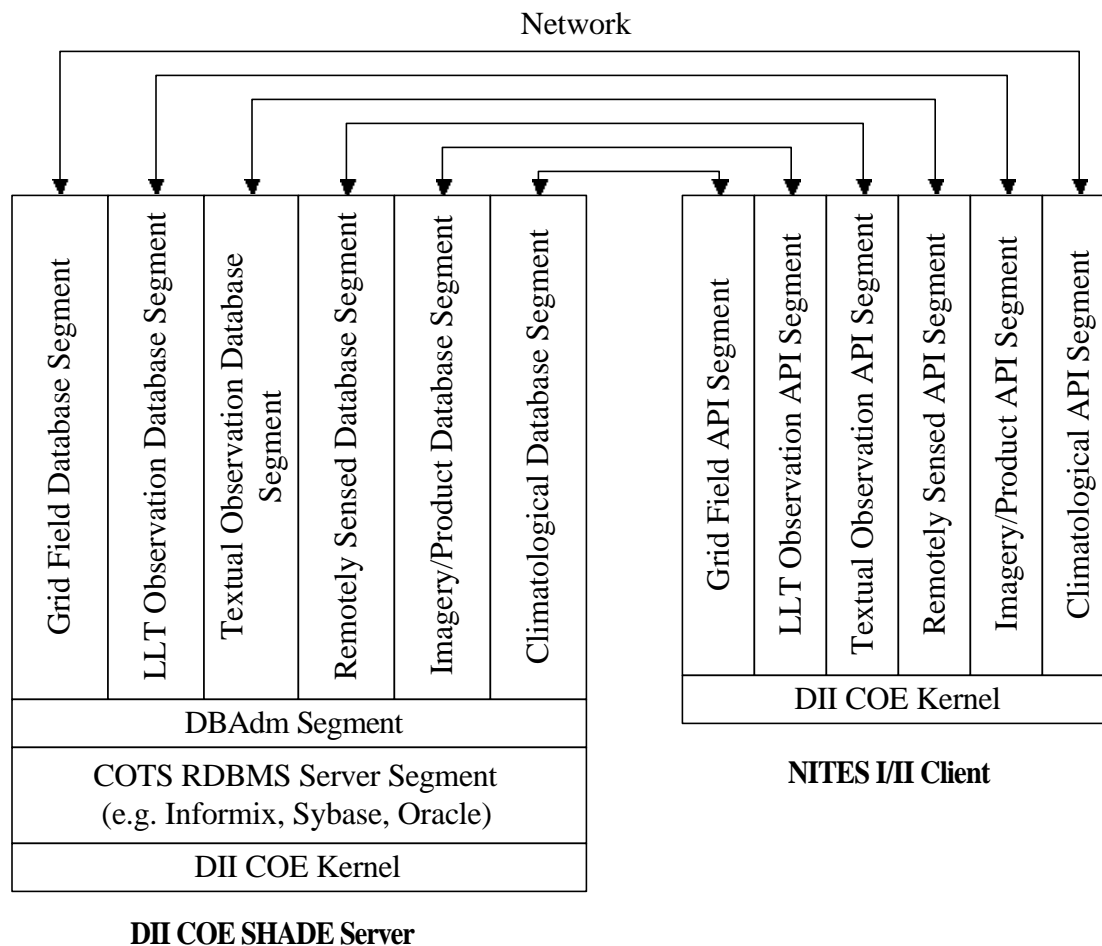


Figure 1. TESS(NC) METOC Database Conceptual Organization

The MALLT and MDLLT segments deal with point observations. These include surface weather observations (hourlies, specials, synoptic observations, METAR reports terminal aerodrome forecasts (TAFs), etc.), upper air observations (e.g., radiosonde reports, aircraft observations), and ocean soundings (bathythermograph, sound velocity profiles, etc.). For upper air and ocean soundings, the database may also store data derived from the original soundings in the form of upper air profiles and ocean profiles.

(This page intentionally left blank.)

2 REFERENCED DOCUMENTS

2.1 Government Documents

STANDARDS

MIL-STD-498 *Software Development and Documentation*
5 December 1994

SPECIFICATIONS

Unnumbered *Performance Specification (PS) for the Tactical Environmental Support*
5 December 1997 *System/Next Century TESS(NC) (AN/UMK-3)*

Unnumbered *Software Requirements Specification for the Tactical Environmental*
30 September 1997 *Support System/Next Century [TESS(3)/NC] Meteorological and*
 Oceanographic (METOC) Database, Space and Naval Warfare Systems
 Command, Environmental Systems Program Office (SPAWAR
 PMW-185), Washington, DC

OTHER DOCUMENTS

Unnumbered *Database Design Description for the Tactical Environmental Support*
30 September 1997 *System/Next Century [TESS(3)/NC]) Meteorological and Oceanographic*
 (METOC) Database, Space and Naval Warfare Systems Command,
 Environmental Systems Program Office (SPAWAR PMW-185),
 Washington, DC

DII.COE.DocReqs-5 *Defense Information Infrastructure (DII) Common Operating*
29 April 1997 *Environment (COE) Developer Documentation Requirements, Version*
 1.0

Department of the Air Force, Headquarters Air Weather Service, Scott AFB, ILL

AWSR 105-2 *Weather Communications Policies and Procedures*
24 August 1990

Naval Research Laboratory, Marine Meteorology Division, Monterey, CA

Unnumbered 9 April 1998	<i>Programming Manual (PM) for the Latitude-Longitude-Time Observation API Segment (MALLT) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database</i>
Unnumbered 9 April 1998	<i>Application Program Interface Reference Manual (APIRM) for the Latitude-Longitude-Time Observation API Segment (MALLT) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database</i>
Unnumbered 9 April 1998	<i>Installation Procedures (IP) for the Latitude-Longitude-Time Observation API Segment (MALLT) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database</i>
Unnumbered 9 April 1998	<i>Installation Procedures (IP) for the Latitude-Longitude-Time Observation Database Segment (MDLLT) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database</i>
Unnumbered 9 April 1998	<i>Software Version Description (SVD) for the Latitude-Longitude-Time Observation API Segment (MALLT) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database</i>
Unnumbered 9 April 1998	<i>Software Version Description (SVD) for the Latitude-Longitude-Time Observation Database Segment (MDLLT) of the Tactical Environmental Support System (Next Century) [TESS(NC)] Meteorological and Oceanographic (METOC) Database</i>

2.2 Non-Government Documents

World Meteorological Organization, Geneva, Switzerland

WMO-306 *Manual On Codes*
1995

3 TEST PREPARATION

3.1 MALLT and MDLLT Segments Test Preparation

Segment testing for each of the tests identified in Section 4 is conducted in the TESS(NC) target hardware and software environment. All testing, with the exception of the installation tests (Section 4.1), is performed using software test driver programs with file or tester provided input data. The goal is to automate the testing to the greatest extent possible (within the schedule constraints) to facilitate general, integration, and regression testing of the segments. The test driver programs used are the same as the test driver programs delivered as part of the API segment delivery. Following API segment installation, the programs are located in the subdirectory: **h/MALLT/Integ/TestSuite**.

3.1.1 Hardware Preparation

To run the tests described herein, the tester must have installed the database segment (MDLLT) on the test server machine where the DII COE RDBMS and the database administration tools reside. Depending on the test, the tester must also have installed the API segment (MALLT), on the test server machine, the test client machine, or in some cases, both machines. The hardware requirements for the test are described in Section 3.1.1 of the *Installation Procedure (IP) for the Latitude-Longitude-Time Observation Database Segment (MDLLT)* and the *Installation Procedure (IP) for the Latitude-Longitude-Time Observation API Segment (MALLT)*. Testing of the APIs in the networked client/server configuration (i.e. PC/Windows NT client, HP-UX database server) requires that both client and server machines are connected on an IEEE 802.3/5 local area network supporting the TCP/IP protocol.

3.1.2 Software Preparation

With the exception of the segment installation tests, the Latitude-Longitude-Time Observation segment tests are performed using semi-automated software test driver programs. These test drivers are executable on HP-UX and Windows NT machines, and are invoked at the command line. The programs rely on ASCII text files or manually entered inputs for test data and control. The program output can be written directly to the screen or redirected to files for review or permanent capture. Test drivers have been written for both static and dynamic API library verification. Each test driver supports multiple test cases through single or batch processing of the text files. Interactive testing is also supported using the command line parameters.

3.1.2.1 Using the Test Driver Programs

The following table identifies the test driver programs used to support Latitude-Longitude-Time Observation testing.

Table 3-1. Latitude-Longitude-Time Observation Test Drivers

Test Driver Name¹	Test Driver Description	Test
MALLTdllIngest, MALLTlibIngest, MALLTslIngest	Ingests (stores) the input Latitude-Longitude-Time Observations into the database.	4.2
MALLTdllGet, MALLTlibGet, MALLTslGet (by Id)	Retrieves (selects) Latitude-Longitude-Time Observation from the database using a record ID. Latitude-Longitude-Time Observations must be stored (ingested) prior to running this test.	4.3
MALLTdllGet, MALLTlibGet, MALLTslGet (by Query)	Retrieves any number of Latitude-Longitude-Time Observations from the database using specified criteria. Latitude-Longitude-Time Observations must be stored (ingested) prior to running this test.	4.4
MALLTdllGet, MALLTlibGet, MALLTslGet (catalog list)	Retrieves a catalog listing (summary list) of Latitude-Longitude-Time Observations from the database for specified criteria. Latitude-Longitude-Time Observations must be stored (ingested) prior to running this test.	4.5
MALLTdllUpdate, MALLTlibUpdate, MALLTslUpdate	Updates a single Latitude-Longitude-Time Observation in the database with specific data as input by the tester. Latitude-Longitude-Time Observations must be stored (ingested) prior to running this test.	4.6
MALLTdllDelete, MALLTlibDelete, MALLTslDelete	Deletes the Latitude-Longitude-Time Observations from the database for a record ID. Latitude-Longitude-Time Observations must be stored (ingested) prior to running this test.	4.7

Note 1: Driver program names contain dll, sl or lib, where dll (on NT machine) is linked with dlls, sl (on HP) is linked with shared libraries, and lib (on NT/HP) is linked with static/archived libraries. Programs are otherwise functionally identical. Prior to running the dynamic API test drivers, an environmental variable must be set after a new installation of the MALLT segment. This procedure is covered in Section 3.1.3 of this document.

3.1.2.2 Command Line Arguments

The command line arguments permit the tester to control the test program, test program inputs, test program output, and exercise segment functionality. Each of the driver programs supports the same set of command line parameter inputs. The following table describes the arguments. The *italicized* text denotes the sample name of a file given by the user and any naming convention is up to the user.

Table 3-2. Latitude-Longitude-Time Observation Command Line Arguments

Argument	Description
-h	Displays help information about the specific test driver program invoked. e.g., MALLTlibIngest -h
-d	Turns on the debug macros (DPRINTS) within the APIs causing the display of debug information at runtime. e.g., MALLTlibIngest -d
-l <file name>	Saves the manually entered inputs to a file, which can be used to run automated testing in the batch (-b) processing mode. e.g., MALLTlibIngest -l <i>ingtest2</i>
-b <directory path>	Turns on test driver batch processing mode. Batch processing mode causes the test driver to run the test cases associated with the input file located in the specified directory path. e.g., MALLTlibIngest -b TESTDATA/INGEST/ <i>ingtest2</i>

3.1.2.3 Test Input Data

Test driver program inputs are provided interactively or through the test case ASCII input files. The input files are delivered with the API segment and loaded onto the target system when the segment is installed. The files are located under the **/h/MALLT/Integ/TestSuite/TESTDATA** path of the target system. The following table identifies the subdirectory name and applicable test under the TESTDATA path.

Table 3-3. Test Driver Subdirectories and Names

Test	Subdirectory	Description
4.2	INGEST/	This subdirectory contains the Latitude-Longitude-Time Observation ingest test case data files. These files are used in conjunction with the MALLT Ingest test drivers.

Table 3-3. Test Driver Subdirectories and Names

Test	Subdirectory	Description
4.3	GET/	This subdirectory contains the Latitude-Longitude-Time Observation test case files with the parameters required to retrieve observations using the database record ID. These files are used in conjunction with the MALLT Get test drivers.
4.4	GET/	This subdirectory contains the Latitude-Longitude-Time Observation test case files with the parameters required to retrieve one or more Latitude-Longitude-Time Observations for specified criteria. These files are used in conjunction with the MALLT Get test drivers.
4.5	GET/	This subdirectory contains the Latitude-Longitude-Time Observation test case files with the parameters required to retrieve a catalog listing of one or more Latitude-Longitude-Time Observations for specified criteria. These files are used in conjunction with the MALLT Get test drivers.
4.7	DELETE/	This subdirectory contains the Latitude-Longitude-Time Observation test case files providing the deletion criteria used to delete observations from the database. These files are used with the MALLT Delete test drivers.

3.1.2.4 Test Output Data

Once a test driver is executed in an xterm or console window (see Section 3.1.3 for invoking a window on the HP-UX or NT systems), the user will be able to review debug output and/or the status of the driver results. If desired, the test team can redirect these outputs to a file for later review. The following example runs the ingest test driver with batch (-b) processing using test case all.log in the INGEST sub-directory, with debug output enabled and redirected to the file named *test1*. The following would be entered at the prompt and executed by selecting the <Enter> button:

➤ MALLTlibIngest -b TESTDATA/INGEST/all.log -d > test1

All test results that support this document are furnished on a 3.5" floppy disk in a "text" format (the debug output is not provided). Test Results are discussed in **Appendix B** of this document.

To ensure the test case data was ingested into the database, open an xterm window on the HP-UX machine and follow the steps in Section 3.1.3 to use dbaccess to verify that the Latitude-Longitude-

Time Observations were ingested. Each observation can be reviewed to verify the data fields in each record.

3.1.3 Other Preparations

3.1.3.1 Establishing an xterm or console window on the HP-UX and NT platforms

In order to test the database and API segments, semi-automated software test driver programs were developed. These programs are executable from the command line, can use interactive or file inputs, and can have the output redirected to a file. To operate these driver programs in the DII COE 3.1 software environment requires that an “xterm” or console window be made available. The following procedures describe how to create the console windows for the HP-UX and Windows NT test environments.

In some of the test cases it maybe necessary for the user to verify the data has been ingested, updated, or deleted in the database located on the HP-UX system. This is accomplished using an xterm window and dbaccess with the steps discussed in the Section below.

3.1.3.2 Establishing a console window for a DII COE 3.1 HP-UX System

Log in and perform the following steps:

1. Click on the **Application Manager** icon on toolbar.
2. Double-click on the **Desktop_Apps** icon.
3. Double-click on the **Create Action** icon.
4. Enter **xterm** in the **Action Name** field.
5. Click **Find Set..** in the Action Icons panel.
6. In **Icon Folders** list, double-click on **/usr/dt/appconfig/icons/C.**
7. Scroll **Icon Files** list down to the **Dtxterm** icon (a terminal with an X).
8. Click on the **Dtxterm** icon.
9. Click on the **Ok** button.
10. Enter **/usr/bin/X11/xterm -sb -sl 800** in Command field.
11. Enter **This is an xterm** in Help Text field.
12. Select **File/Save** from window menu bar.
13. You should see a **Create Action - Confirmation** window appears.
14. Click **Ok.**
15. Close **Create Action** window.
16. Close **Application Manager** window.
17. Click on the **Home Folder** icon on toolbar.

18. You should see the new action in your folder, and double-click on the new action to launch the folder.

If desired this icon can be installed into the "Personal Applications" pop-up menu panel on the toolbar. This is accomplished by:

1. Click on the **Home Folder** icon on toolbar.
2. Click on the **Personal Application** panel "up arrow" button (above the icon), drag your new action and drop it on the **Install Icon** button.
3. You should see your new icon appear in the panel.
4. You can move the new icon so it is always visible on the toolbar by right clicking on the new icon and select **Copy to Main Panel**.

3.1.3.3 Establishing a console window for a Windows NT 4.0 System

The following steps are required to initialize an MS DOS console window on the Windows NT system.

Login as the appropriate user (site dependent) and perform the following steps:

1. Click on the **Start** button at the lower left hand portion of the window.
2. Select **Programs** directly followed by **MS-DOS Prompt**.
3. An *MS-DOS PROMPT* window will be displayed with the DOS command line (C:\) prompt.

3.1.3.4 Setting the Environmental Variable to Run the Dynamic Library API

Before testing the dynamic (shared) library API ('sl' on the HP machine, 'dll' on the NT machine), the tester must ensure that the PATH environmental variable is set after each installation of the MALLT segment. This is accomplished by opening an xterm and console window on the HP-UX and NT machines, respectively.

The following steps are required to complete this process:

HP-UX:

1. Open an xterm window.
2. Set the path on the HP-UX by typing:
`setenv SHLIB_PATH ${SHLIB_PATH}:/h/MALLT/bin <Enter>`
3. To use Informix tools, e.g., dbaccess, set the following:
`setenv INFORMIXDIR /opt/informix`
`setenv INFORMIXSERVER online_coe`

NT:

1. Open a DOS window.
2. Set the path by typing:
`set PATH=%PATH%;c:/h/MALLT/bin <Enter>`

3.1.3.5 Reviewing the Content of the Database using dbaccess

When running the test drivers and associated test cases for Ingest, Update, and Delete it may be necessary to review the affected changes in the database located on the HP-UX machine. This is facilitated by running the Informix dbaccess tool on the target machine and completing the following steps:

1. In the xterm, change directories to the informix bin directory:
`>cd /opt/informix/bin`
2. Set the environmental variable in the xterm by typing:
`>setenv TERM vt100`
3. Run dbaccess by typing:
`>dbaccess`
4. Once in dbaccess, select **Query Language** from menu (default selection) and press <Enter>
5. Use the up/down arrows to select the database of interest (e.g., MDLLT) then press <Enter>
6. The user is provided several menu options. These options can be selected by either typing the first letter of the option (e.g., typing **I** for Info), or using the arrow keys and <Enter> to select an option.
7. To view the list of data sets in the database by name, select **Info** and the list of data sets will be displayed. Select <Enter> then **E** for exit.
8. To view records in a data set, select **New** and type:
`select * from datasetname` (substituting the actual name in place of *datasetname*) and press <Escape> and then select **Run**.
9. This will display the ingested records stored in the specified dataset. The records will show the data fields for each observation stored in the dataset. If there is more than one page, select **Next** from the menu until all records have been displayed.
10. To exit dbaccess, use the **Exit** menu selection. User may need to exit several menu levels before actually exiting dbaccess.

(This page intentionally left blank.)

4 TEST DESCRIPTIONS

4.1 MDLLT and MALLT Segment Installation Test

The following test cases comprise a segment installation test to verify that the Latitude-Longitude-Time Observation database and API segments install correctly in the target hardware and software environment.

4.1.1 MDLLT Database Segment Installation Test Case

This test case verifies the correct installation of the MDLLT database segment. MDLLT will be installed using the DII COE provided installation tools on the HP-UX target platform.

4.1.1.1 Prerequisite Conditions

The prerequisite conditions for this test case are defined in Section 3 of the *Installation Procedure (IP) for the Latitude-Longitude-Time Observation Database Segment (MDLLT) of the Tactical Environmental Support System Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database*, version 4.1 or later (herein referred to as MDLLT IP).

4.1.1.2 Test Inputs

There are no test inputs for this test case other than the operator actions identified in Section 4 of the MDLLT IP.

4.1.1.3 Expected Test Results

The Segment Installer window will display **METOC Text Observation Database Segment** in the Currently Installed Segments Section of the window (See Section 4 of the MDLLT IP).

4.1.1.4 Criteria for Evaluating Results

The Segment Installer tool determines and indicates successful installation of the segment to the tester.

4.1.1.5 Test Procedure

The test procedure is identical to the segment installation instructions provided in Section 4 of the MDLLT IP.

4.1.1.6 Assumptions and Constraints

This test assumes the target hardware is operating correctly and configured with the operating and application software identified in Sections 3.1 and 3.2 in the MDLLT IP.

4.1.2 MALLT API Segment HP Installation Test Case

This test case verifies the correct installation of the HP-UX MALLT API segment. MALLT will be installed using the DII COE provided installation tools on the HP-UX target platform. The MALLT API Segment for HP provides both the dynamic link and static link libraries when installed.

4.1.2.1 Prerequisite Conditions

The prerequisite conditions for this test case are defined in Section 3 of the *Installation Procedure (IP) for the Latitude-Longitude-Time Observation API Segment (MALLT) of the Tactical Environmental Support System Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database*, version 4.1 or later (herein referred to as MALLT IP).

4.1.2.2 Test Inputs

There are no test inputs for this test case other than the operator actions identified in Section 4 of the MALLT IP.

4.1.2.3 Expected Test Results

The Segment Installer window will display **METOC Text Observation API Segment** in the Currently Installed Segments Section of the window (See Section 4 of the MALLT IP).

4.1.2.4 Criteria for Evaluating Results

The Segment Installer tool determines and indicates successful installation of the segment to the tester.

4.1.2.5 Test Procedure

The test procedure is identical to the segment installation instructions provided in Section 4 of the MALLT IP.

4.1.2.6 Assumptions and Constraints

This test assumes the target hardware is operating correctly and configured with the operating and application software identified in Sections 3.1 and 3.2 in the MALLT IP.

4.1.3 MALLT API Segment Windows NT Installation Test Case

This test case verifies the correct installation of the Windows NT version of the MALLT API segment. MALLT will be installed using the InstallShield™ software provided with the MALLT Windows NT Segment. The MALLT API Segment for Windows NT provides both the dynamic link and static link libraries when installed.

4.1.3.1 Prerequisite Conditions

The prerequisite conditions for this test case are defined in Section 3 of the *Installation Procedure (IP) for the Latitude-Longitude-Time Observation API Segment (MALLT) of the Tactical Environmental Support System Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database*, version 4.1 or later (herein referred to as MALLT IP).

4.1.3.2 Test Inputs

There are no test inputs for this test case other than the operator actions identified in Section 4 of the MALLT IP.

4.1.3.3 Expected Test Results

The InstallShield™ installation program will display the Installation Complete dialogue box. A directory listing of the C:\h\MALLT directory and subdirectories will display the dynamic link libraries, static link libraries, API test drivers, and test data files installed with the segment. Note: The Windows NT Explorer application can be used to view the contents of the directories. Section 4.4 of the MALLT IP lists the installation directories and contents.

4.1.3.4 Criteria for Evaluating Results

The InstallShield™ installation program determines and indicates successful installation of the segment to the tester. Additionally, the contents of the **C:\h\MALLT** directory and subdirectories should match the list referenced in Section 4.4 of the IP document.

4.1.3.5 Test Procedure

The test procedure is identical to the segment installation instructions provided in Section 4 of the MALLT IP.

4.1.3.6 Assumptions and Constraints

This test assumes the target hardware is operating correctly and configured with the operating and application software identified in Sections 3.1 and 3.2 in the MALLT IP.

4.2 Latitude-Longitude-Time Observation Data Ingest Test

The following test cases verify that the MDLLT database and MALLT API segments support ingesting and storing of Latitude-Longitude-Time Observations.

4.2.1 Ingest Latitude-Longitude-Time Observation Test

This test will verify that MDLLT and MALLT correctly store the Latitude-Longitude-Time Observation messages identified in Table 3.2-7 of the METOC Database SRS. In addition to testing the storage of each observation type, the following areas will be tested: erroneous observation types; geographic and time parameters; and Year 2000 (Y2K) issues.

4.2.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be de-installed and then reinstalled. This will clean out any data in the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.

4.2.1.2 Test Inputs

The inputs necessary for this test case are provided in the **INGEST** test case files described in **Appendix A** of this document. These files provide the descriptive parameters and latitude-longitude-time observation data required for ingest of observations to the database. The input data

format matches the formats defined in WMO-386 for the Latitude-Longitude-Time Observations supported by MDLLT. The supported types and subtypes are listed in MDLLT SRS Table 3.2-7.

4.2.1.3 Expected Test Results

The MDLLT database will contain the latitude-longitude-time observations and associated descriptive data. Unique record IDs will be generated for each record stored in the database. The database will not contain any observations from the error test cases. The detailed expected test results are provided in **Appendix B** of this document.

4.2.1.4 Criteria for Evaluating Results

The output from the test cases must exactly match the expected test results with no deviation. The output information can be saved for comparison by re-directing the results to a file or by other conventional screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. The database records can be viewed directly using the database access (dbaccess) tool to verify observation data has been stored properly. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.2.1.5 Test Procedure

Once the prerequisite conditions (4.2.1.1) have been met, the **MALLT Ingest** test driver is run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.2.1.6 Assumptions and Constraints

These test cases were designed with the assumption that the target hardware is operating correctly and configured with the operating system, applications, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.2.2 Multi User Ingest Latitude-Longitude-Time Observation Test Case

This test case will verify that MDLLT and MALLT correctly store the latitude-longitude-time observations identified in Table 3.2-7 of the METOC Database SRS when simultaneously ingested via the HP-UX and Windows NT machines.

4.2.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be de-installed and then reinstalled. This will clean out any data in the database. Note: The database server should be in an “Up” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.

4.2.2.2 Test Inputs

The test inputs necessary for this test are provided in the **INGEST** test case files described in **Appendix A** of this document. These files provide the data required for ingest of latitude-longitude-time observations into the database. The latitude-longitude-time observation input data matches the formats defined in WMO-386 for the Latitude-Longitude-Time Observations supported by MDLLT. The supported types and subtypes are listed in MDLLT SRS Table 3.2-7.

4.2.2.3 Expected Test Results

The MDLLT database will contain the ingested latitude-longitude-time observations and associated data tables. If both HP-UX and Windows NT machines are populating the database, twice as many latitude-longitude-time observations will be ingested as compared to the single ingest discussed in Section 4.2.1. Unique record IDs will be generated for each message type/subtype record stored in the database. The detailed expected test results are provided in **Appendix B** of this document.

4.2.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver and tester use of the database access tool (e.g., Informix dbaccess discussed in Section 3.1.3) must match the expected test results. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. The database records can be viewed directly using the database access (dbaccess) tool to verify observation data has been stored properly. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.2.2.5 Test Procedure

Once the prerequisite conditions (4.2.2.1) for the test have been met, the **MALLT Ingest** test driver is run by the tester on both the HP-UX and Windows NT platforms simultaneously. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.2.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.3 Latitude-Longitude-Time Observation Get By ID Test

The following test cases verify that the MDLLT database and MALLT API segments supporting the retrieval of a single observation from the database.

4.3.1 Retrieve Latitude-Longitude-Time Observations using Get By ID

This test will verify that MDLLT and MALLT correctly retrieve a latitude-longitude-time observation identified in Table 3.2-7 of the METOC Database SRS. The test will demonstrate the retrieving of a single observation using a series of test cases.

4.3.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP platform the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database segment be de-installed and the reinstalled. This will clean out any data on the database. Note: The database server should be in an “**Up**” status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observation data available. It may be desirable to run a data ingest prior to running this test.

4.3.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **GETBYID** test case files described in **Appendix A** of this document. These files provide the record ID required for retrieval of a single latitude-longitude-time observation from the database.

4.3.1.3 Expected Test Results

The API will retrieve the correct latitude-longitude-time observations. The expected test results are provided in **Appendix B** of this document.

4.3.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation from the expected result. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.3.1.5 Test Procedure

Once the prerequisite conditions (4.3.1.1) for the test have been met, the **MALLT GetByID** test driver can be run. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.3.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.3.2 Retrieve Latitude-Longitude-Time Observation using Get By ID Error Test

This test case will verify that MDLLT and MALLT will not retrieve any latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS) when an erroneous record Id is input. The test will use a series of test cases.

4.3.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data on the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observation data available. It may be desirable to run a data ingest prior to running this test case.

4.3.2.2 Test Inputs

The test inputs necessary for this test are provided in the **GETBYID** test case files described in **Appendix A** of this document. These files provide a record ID required for retrieval of a single latitude-longitude-time observation from the database.

4.3.2.3 Expected Test Results

The API will not retrieve any latitude-longitude-time observations. The expected test results are provided in **Appendix B** of this document.

4.3.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected

test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.3.2.5 Test Procedure

Once the prerequisite conditions (4.3.2.1) for the test have been met, the **MALLT GetByID** test driver can be run. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.3.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.3.3 Simultaneous Retrieve of a Latitude-Longitude-Time Observation using the Get By ID Test Case

This test case will verify that MDLLT and MALLT correctly retrieves latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS) when executed from the HP-UX and Windows NT machine simultaneously. The test will demonstrate the retrieving of single observations on both systems using a series of identical test cases.

4.3.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.13. of this document.
3. The database server must be “Up” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and then reinstalled. This will clean out any data in the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observation data available. It may be desirable to run a data ingest prior to running this test case.

4.3.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **GETBYID** test case files described in **Appendix A** of this document. These files provide the record ID required for retrieval of a single latitude-longitude-time observation from the database.

4.3.3.3 Expected Test Results

The API will retrieve latitude-longitude-time observations. The detailed expected test results are provided in **Appendix B** of this document.

4.3.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.3.3.5 Test Procedure

Once the prerequisite conditions (4.3.3.1) for the test have been met, the **MALLT GetByID** test driver is run by the tester on both the HP-UX and Windows NT machines simultaneously. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.3.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.4 Latitude-Longitude-Time Observation Get By Query

The following test cases verify that the MDLLT database and MALLT API segments supporting the retrieval of multiple observations from the database.

4.4.1 Retrieve Latitude-Longitude-Time Observations using the Get By Query Test Case

This test will verify that MDLLT and MALLT correctly retrieve multiple latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS). The test will demonstrate the retrieving of a multiple latitude-longitude-time observations using a series of test cases.

4.4.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data in the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observations available. It may be desirable to run a data ingest prior to running this test case.

4.4.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET** test case driver files described in **Appendix A** of this document. These files provide data required to query the database. These fields include Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used in combination to retrieve multiple latitude-longitude-time observations from the database.

4.4.1.3 Expected Test Results

The API will retrieve latitude-longitude-time observations. The detailed expected test results are provided in **Appendix B** of this document.

4.4.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.4.1.5 Test Procedure

Once the prerequisite conditions (4.4.1.1) for the test have been met, the MALLT GetByQuery test driver can be. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.4.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.4.2 Retrieve Latitude-Longitude-Time Observations using Get By Query Test Case, Geographic Area

This test will verify that MDLLT and MALLT correctly retrieves multiple latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS). These test cases are an exercise of the retrieval of specific geographic areas, which may be confusing for the database

especially when making requests across the equator, international date line, and the Greenwich Prime Meridian.

4.4.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data in the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observation data available. It may be desirable to run a data ingest prior to running this test case.

4.4.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET** test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used in combination to retrieve multiple latitude-longitude-time observations from the database.

4.4.2.3 Expected Test Results

The API will retrieve latitude-longitude-time observations and associated descriptive. The detailed expected test results are provided in **Appendix B** of this document.

4.4.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.4.2.5 Test Procedure

Once the Prerequisite Conditions (4.4.2.1) for the test have been met, the MALLT GetByQuery test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.4.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.4.3 Retrieve Latitude-Longitude-Time Observations using Get By Query Test Case, Year 2000 (Y2K)

This test case will verify that MDLLT and MALLT correctly retrieve multiple latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS). The latitude-longitude-time observations which are part of the furnished ingest test files have time stamps which cross from the year 1999 to 2000.

4.4.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

3. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data in the database. Note: The database server should be in an “Up” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
4. The database must have latitude-longitude-time observation data available. It is required to ingest the simulated observations furnished with this program prior to running this test case.

4.4.3.2 Test Inputs

The test inputs necessary for this test case are provided in the GET test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used in combination to retrieve multiple Latitude-Longitude-Time Observations from the database.

4.4.3.3 Expected Test Results

The API will retrieve latitude-longitude-time observations and associated descriptive. The detailed expected test results are provided in **Appendix B** of this document.

4.4.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.4.3.5 Test Procedure

Once the prerequisite conditions (4.4.3.1) for the test have been met, the **MALLT GetByQuery** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.4.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.4.4 Retrieve Latitude-Longitude-Time Observations using Get Test Case, Wild Card

This test case will verify that MDLLT and MALLT correctly retrieves multiple latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS).

4.4.4.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database segments be de-installed and the reinstalled. This will clean out any data on the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observation data available. It is required to ingest the simulated observations furnished with this program prior to running this test case.

4.4.4.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET** test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used in combination to retrieve multiple latitude-longitude-time observations from the database.

4.4.4.3 Expected Test Results

The API will retrieve latitude-longitude-time observations. The detailed expected test results are provided in **Appendix B** of this document.

4.4.4.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.4.4.5 Test Procedure

Once the prerequisite conditions (4.4.4.1) for the test have been met, the **MALLT GetByQuery** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.4.4.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.4.5 Simultaneous Retrieve Latitude-Longitude-Time Observations using Get By Query

This test will verify that MDLLT and MALLT correctly retrieves multiple latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS) when executed from the HP-UX and Windows NT machines simultaneously, using a series of identical test cases.

4.4.5.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data in the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observations available. It is necessary to ingest the simulated observations furnished with this program prior to running this test.

4.4.5.2 Test Inputs

The test inputs necessary for this test case are provided in the **GET** test case driver files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used in combination to retrieve multiple latitude-longitude-time observations from the database.

4.4.5.3 Expected Test Results

The API will retrieve latitude-longitude-time observations. The detailed expected test results are provided in **Appendix B** of this document.

4.4.5.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.4.5.5 Test Procedure

Once the prerequisite conditions (4.4.5.1) for the test have been met, the **MALLT GetByQuery** test driver can be run by the tester on both the HP-UX and Windows NT machines simultaneously. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.4.5.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.5 Latitude-Longitude-Time Observation Catalog List Test

The following test cases verify that the MDLLT database and MALLT API segments support the retrieval of catalog lists of latitude-longitude-time observations from the database.

4.5.1 Retrieve Latitude-Longitude-Time Observations Catalog List using Catalog Test

This test case will verify that MDLLT and MALLT correctly retrieves a catalog list of latitude-longitude-time observations identified in Table 3.2-7 of the METOC Database SRS, using a series of test cases.

4.5.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “Up” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting Identify Storage under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data on the database. Note: The database server should be in an “Up” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observation data available. It may be desirable to run a data ingest prior to running this test case.

4.5.1.2 Test Inputs

The test inputs necessary for this test case are provided in the CAT test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon,

Originating Site, and the Method of Receipt, which are used in combination to retrieve a listing of latitude-longitude-time observations from the database.

4.5.1.3 Expected Test Results

The API will retrieve a listing of latitude-longitude-time observations corresponding to the input latitude-longitude-time observations. The detailed expected test results are provided in **Appendix B** of this document.

4.5.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.5.1.5 Test Procedure

Once the prerequisite conditions (4.5.1.1) for the test have been met, the **MALLT Catalog** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.5.2 Retrieve Latitude-Longitude-Time Observations using the Catalog, Geographic Area Test Case

This test case will verify that MDLLT and MALLT correctly retrieve a catalog list of latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS) using a series of test cases. These test cases are geared to exercise the retrieval of specific geographic areas, which may be confusing for the database especially when making requests across the equator, international date line, and the Prime Meridian.

4.5.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data on the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observations available. It may be desirable to run a data ingest prior to running this test case.

4.5.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT** test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used in combination to retrieve a catalog list of latitude-longitude-time observations from the database.

4.5.2.3 Expected Test Results

The API will retrieve a list of latitude-longitude-time observations. The detailed expected test results are provided in **Appendix B** of this document.

4.5.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test result. The output can be saved for comparison by re-directing the results to a file or by other screen

capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.5.2.5 Test Procedure

Once the Prerequisite Conditions (4.5.2.1) for the test have been met, the **MALLT Catalog** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.5.3 Retrieve Latitude-Longitude-Time Observations using the Get Catalog Test Case, Year 2000 (Y2K)

This test case will verify that MDLLT and MALLT correctly retrieves a catalog list of latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS), using a series of test cases. The latitude-longitude-time observations which are part of the furnished ingest process have time stamps which cross from the year 1999 to 2000.

4.5.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “Up” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.

4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data on the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observations available. It is required to ingest the simulated observations furnished with this program prior to running this test case.

4.5.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT** test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used in combination to retrieve a catalog list of latitude-longitude-time observations from the database.

4.5.3.3 Expected Test Results

The API will retrieve a list of latitude-longitude-time. The detailed expected test results are provided in **Appendix B** of this document.

4.5.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.5.3.5 Test Procedure

Once the prerequisite conditions (4.5.3.1) for the test have been met, the **MALLT Cat** test driver can be run by the tester. The test driver program automatically executes the specified test case. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.5.4 Retrieve Latitude-Longitude-Time Observations using the Catalog Test Case, Wild Card

This test case will verify that MDLLT and MALLT correctly retrieves a catalog list of latitude-longitude-time observations identified in Table 3.2-7 of the METOC Database SRS, using a series of wild card test.

4.5.4.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
3. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data on the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
4. The database must have latitude-longitude-time observation data available. It is required to ingest the simulated observations furnished with this program prior to running this test case.

4.5.4.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT** test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon,

Originating Site, and the Method of Receipt, which are used in combination to retrieve a catalog list of latitude-longitude-time observations from the database.

4.5.4.3 Expected Test Results

The API will retrieve a list of latitude-longitude-time observations. The detailed expected test results are provided in **Appendix B** of this document.

4.5.4.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.5.4.5 Test Procedure

Once the Prerequisite Conditions (4.5.4.1) for the test have been met, the **MALLT Catalog** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.4.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.5.5 Retrieve Latitude-Longitude-Time Observations using the Catalog Error Test

This test will verify that MDLLT and MALLT will not retrieve a catalog list of latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS) when erroneous query data is input. The test will demonstrate that a variety of erroneous data can be handled by the test driver.

4.5.5.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
3. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data on the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
4. The database must have latitude-longitude-time observations available. It is necessary to ingest the simulated observations furnished with this program prior to running this test case.

4.5.5.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT** test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used to verify that the test driver can handle erroneous.

4.5.5.3 Expected Test Results

The API will not retrieve any observations. The detailed expected test results are provided in **Appendix B** of this document.

4.5.5.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.5.5.5 Test Procedure

Once the Prerequisite Conditions (4.5.5.1) for the test have been met, the **MALLT Get** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.5.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.5.6 Simultaneous Retrieve Latitude-Longitude-Time Observations using the Catalog Test

This test case will verify that MDLLT and MALLT correctly retrieve a catalog list of latitude-longitude-time observations when executed from the HP-UX and the Windows NT machines simultaneously. The test will demonstrate the retrieval of a catalog list on both systems using a series of identical test cases.

4.5.6.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database be de-installed and the reinstalled. This will clean out any data in the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.

5. The database must have latitude-longitude-time observation data available. It is required to ingest the simulated observations furnished with this program prior to running this test case.

4.5.6.2 Test Inputs

The test inputs necessary for this test case are provided in the **CAT** test case files described in **Appendix A** of this document. These fields include: Type, Report Times, Valid Times, Lat/Lon, Originating Site, and the Method of Receipt, which are used in combination to retrieve a catalog list of latitude-longitude-time observations from the database.

4.5.6.3 Expected Test Results

The API will retrieve a catalog list of latitude-longitude-time observations and associated descriptive. The detailed expected test results are provided in **Appendix B** of this document.

4.5.6.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT).

4.5.6.5 Test Procedure

Once the prerequisite conditions (4.5.6.1) for the test have been met, the **MALLT Catalog** test driver can be run by the tester on both the HP-UX and Windows NT machines simultaneously. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.5.6.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.6 Updating an Existing Latitude-Longitude-Time Observation Test

The following test cases verify that the MDLLT database and MALLT API segments support the update of an existing latitude-longitude-time observation. This test will also verify multi-usage and updates using erroneous data.

4.6.1 Updating an Existing Latitude-Longitude-Time Observation Test

This test case will verify that MDLLT and MALLT correctly updates latitude-longitude-time observation data (identified in Table 3.2-7 of the METOC Database SRS). The test will demonstrate the updating of the data fields of existing observations in the database. As a result, a new observation will be entered into the database, and will be marked as edited.

4.6.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must and have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data in the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observation data available. It may be desirable to run a data ingest prior to running this test case.

4.6.1.2 Test Inputs

The test inputs necessary for this test case are provided in the **UPDATE** test case files described in **Appendix A** of this document. The input fields include record ID and dataset name.

4.6.1.3 Expected Test Results

The API will update the latitude-longitude-time observations corresponding to the input changes. The detailed expected test results are provided in **Appendix B** of this document.

4.6.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT). The database can be viewed using the dbaccess tool to verify observation data has been updated properly.

4.6.1.5 Test Procedure

Once the prerequisite conditions (4.6.1.1) for the test have been met, the **MALLT Update** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.6.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.6.2 Updating an Existing Latitude-Longitude-Time Observation using Erroneous Data Test

This test case will verify that MDLLT and MALLT will not update latitude-longitude-time observations data (identified in Table 3.2-7 of the METOC Database SRS). The test will demonstrate that erroneous input is handled properly. As a result, the user will be informed of the error.

4.6.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be de-installed and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observations available. It may be desirable to run a data ingest prior to running this test case.

4.6.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **UPDATE** test case files described in **Appendix A** of this document. The input fields include record ID and dataset name.

4.6.2.3 Expected Test Results

The API will update the latitude-longitude-time observations corresponding to the input data. The detailed expected test results are provided in **Appendix B** of this document.

4.6.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX

and Windows NT). The database can be viewed using the dbaccess tool to verify observation data has been updated properly.

4.6.2.5 Test Procedure

Once the prerequisite conditions (4.6.2.1) for the test have been met, the **MALLT Update** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver and obtain the test results.

4.6.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.6.3 Simultaneous Updating of Existing Latitude-Longitude-Time Observations Test

This test case will verify that MDLLT and MALLT correctly updates latitude-longitude-time observations when executed from both the HP-UX and the Windows NT machines simultaneously.

4.6.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that the database segment be de-installed and the reinstalled. This will clean out any data in the database. Note: The database server should be in an “**Up**” status prior to install/de-installs. Refer to

the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.

5. The database must have latitude-longitude-time observations available. It may be desirable to run a data ingest prior to running this test case.

4.6.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **Update** test case files described in **Appendix A** of this document. The input fields include record ID and dataset name.

4.6.3.3 Expected Test Results

The API will update the latitude-longitude-time observations corresponding to the input data. The detailed expected test results are provided in **Appendix B** of this document.

4.6.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT). The database can be viewed using the dbaccess tool to verify observation data has been updated properly.

4.6.3.5 Test Procedure

Once the Prerequisite Conditions (4.6.3.1) for the test have been met, the **MALLT Update** test driver can be run by the tester on both the HP-UX and Windows NT machines simultaneously. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.6.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.7 Deleting a Latitude-Longitude-Time Observation Test

The following test cases verify that the MDLLT database and MALLT API segments supporting the deletion of an existing latitude-longitude-time observation. This test will also verify multi-usage and deletions using erroneous data.

4.7.1 Deleting a Latitude-Longitude-Time Observation Test

This test case will verify that MDLLT and MALLT correctly deletes latitude-longitude-time observations identified in Table 3.2-7 of the METOC Database SRS. The test will demonstrate the deletion of a single observation using a series of test cases.

4.7.1.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document.
3. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
4. To ensure the test environment has a clean database, it is recommended that database and API segments be de-installed and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an “**Up**” status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
5. The database must have latitude-longitude-time observations available. It may be desirable to run a data ingest prior to running this test case.

4.7.1.2 Test Inputs

The inputs necessary for this test case are provided in the DELETE test case files described in **Appendix A** of this document. These files provide the Record ID required for deletion of a single latitude-longitude-time observation from the database.

4.7.1.3 Expected Test Results

The API will delete latitude-longitude-time observations (one per case) and associated descriptive. The detailed expected test results are provided in **Appendix B** of this document.

4.7.1.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT). The database can be viewed using the dbaccess tool to verify observation data has been deleted.

4.7.1.5 Test Procedure

Once the prerequisite conditions (4.7.1.1) for the test have been met, the **MALLT DeleteByID** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver and obtain the test results.

4.7.1.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.7.2 Deleting a Latitude-Longitude-Time Observation using the Delete By ID Error Test

This test case will verify that MDLLT and MALLT will not delete any latitude-longitude-time observations when an erroneous Record ID is input.

4.7.2.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
3. To ensure the test environment has a clean database, it is recommended that database and API segments be de-installed and the reinstalled. This will clean out any data on the database server. Note: The database server should be in an “**Up**” status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.
4. The database must have latitude-longitude-time observation data available. It may be desirable to run a data ingest prior to running this test case.

4.7.2.2 Test Inputs

The test inputs necessary for this test case are provided in the **DELETE** test case files described in **Appendix A** of this document. These files provide the record ID required for deleting a latitude-longitude-time observation from the database.

4.7.2.3 Expected Test Results

The API will not delete any latitude-longitude-time observations (one per case). The detailed expected test results are provided in **Appendix B** of this document.

4.7.2.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX

and Windows NT). The database can be viewed using the dbaccess tool to verify observation data has been deleted.

4.7.2.5 Test Procedure

Once the Prerequisite Conditions (4.7.2.1) for the test have been met, the **MALLT DeleteByID** test driver can be run by the tester. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.7.2.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

4.7.3 Simultaneous Deleting a Latitude-Longitude-Time Observation using the Delete By ID Test

This test will verify that MDLLT and MALLT correctly deletes latitude-longitude-time observations (identified in Table 3.2-7 of the METOC Database SRS) when executed from the HP-UX and Windows NT machine simultaneously. For this particular case either the HP-UX or Windows NT will attempt to delete the requested observation, but only one will be successful. The other platform will receive an error that the observation does not exist.

4.7.3.1 Prerequisite Conditions

The following conditions must be established prior to executing this test case:

1. Applicable segments are loaded on the target test machines as specified in Section 3 of the MALLT and MDLLT IP documents.
2. On the HP target platform, the tester must have access to an xterm window. On the Windows NT machine, the tester must have access to a DOS window. These windows are required to operate the test driver programs and capture output. Procedures for establishing these windows are provided in Section 3.1.3 of this document. The database server must be “**Up**” for proper connectivity between the API and Database. This can be verified by logging in as *dbadmin* and selecting **Identify Storage** under the Database Storage menu bar.
3. To ensure the test environment has a clean database, it is recommended that database and API segments be de-installed and the reinstalled. This will clean out any data on the

database server. Note: The database server should be in an “**Up**” status prior to install/deinstalls. Refer to the segment installation procedures (Section 4 of the MALLT and MDLLT IP documents) for proper installation procedures.

4. The database must have latitude-longitude-time observation data available. It may be desirable to run a data ingest prior to running this test case.

4.7.3.2 Test Inputs

The test inputs necessary for this test case are provided in the **DELETE** test case files described in **Appendix A** of this document. These files provide the Record ID required for retrieval of a single latitude-longitude-time observation from the database.

4.7.3.3 Expected Test Results

The API will delete latitude-longitude-time observations (one per case) and associated descriptive. The detailed expected test results are provided in **Appendix B** of this document.

4.7.3.4 Criteria for Evaluating Results

The test case outputs derived from the test driver must match exactly with the expected test results with no deviation. The output can be saved for comparison by re-directing the results to a file or by other screen capture techniques. The file can then be viewed and compared with the expected test results provided in this document. Each test case must be run on both target platforms (HP-UX and Windows NT). The database can be viewed using the dbaccess tool to verify observation data has been deleted.

4.7.3.5 Test Procedure

Once the Prerequisite Conditions (4.7.3.1) for the test have been met, the **MALLT DeleteByID** test driver can be run by the tester on both the HP-UX and Windows NT machines simultaneously. Section 3.1.2 of this document describes the procedures required to run the test driver program and obtain the test results.

4.7.3.6 Assumptions and Constraints

This test case assumes the target hardware is operating correctly and configured with the operating, application, and test driver software identified in Sections 3.1 and 3.2 of this document and the MDLLT IP, respectively.

5 REQUIREMENTS TRACEABILITY

All of the test cases discussed in Section 4 of this document were derived from the specifications and requirements referenced in the *Performance Specification (PS) for the Tactical Environmental Support System/Next Century [TESS(NC)] (UN/UMK-3)* and the *Software Requirements Specification for the Tactical Environmental Support System/Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database*.

6 NOTES

6.1 Glossary of Acronyms

AESS	Allied Environmental Support System
API	Application Program Interface
APIRM	API Reference Manual
COE	Common Operating Environment
DBDD	Database Design Description
DID	Data Item Description
DII	Defense Information Infrastructure
GCCS	Global Command and Control System
IC4ISR	Integrated Command, Control, Communications, Computer, and Intelligence Surveillance Reconnaissance
IMOSS	Interim Mobile Oceanographic Support System
JMCIS	Joint Maritime Command Information System
JMS	Joint METOC Segment
MALLT	Latitude-Longitude-Time Observation API Segment of the TESS(NC) METOC Database
MDLLT	Latitude-Longitude-Time Observation Database Segment of the TESS(NC) METOC Database
METOC	Meteorological and Oceanographic
MIDDS	Meteorological Integrated Data Display System
NC	Next Century
PS	Performance Specification
SRS	Software Requirements Specification

TESS Tactical Environmental Support System

Appendix A - Latitude-Longitude-Time Observation Segment Test Inputs

The following data and files are required as input data by Latitude-Longitude-Time Observation segment (i.e. MDLLT, MALLT) testing.

A.1 MDLLT and MALLT Segment Installation Test

No input data is required by these Test Cases 4.1.1, 4.1.2, and 4.1.3. See associated MDLLT and MALLT Installation Procedure documents.

A.2 Latitude-Longitude-Time Observation Data Ingest Test

A.2.1 Ingest Required Latitude-Longitude-Time Observations Test Case (4.2.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the **/h/MALLT/Integ/TestSuite/TESTDATA/INGEST** directory on the target platform.

Input Filename	Description
all.log	–Log file to input all observation types into database
airep.inp	–Airep data for all.log
bathy.inp	Bathy data for all.log
buoy.inp	Buoy data for all.log
metar.inp	Metar data for all.log
op.inp	Ocean profile data for all.log
pirep.inp	Pirep data for all.log
rockFixd.inp	Rocket (fixed) data for all.log
rockShip.inp	Rocket (ship) data for all.log
speci.inp	Speci data for all.log
synFixd.inp	Synoptic (fixed) data for all.log
synMobil.inp	Synoptic (mobil) data for all.log
synShip.inp	Synoptic (ship) data for all.log
taf.inp	TAF data for all.log
uaTmpDrop.inp	Upper air temp (drop) data for all.log
uaTmpFixd.inp	Upper air temp (fixed) data for all.log
uaTmpProf.inp	Upper air temp (profile) data for all.log
uaTmpShip.inp	Upper air temp (ship) data for all.log

Input Filename	Description
uaWndFixd.inp	Upper air wind (fixed) data for all.log
uaWndMobil.inp	Upper air wind (mobil) data for all.log
uaWndShip.inp	Upper air wind (ship) data for all.log

The following is an example of the log file data structure required for the ingesting of a typical Latitude-Longitude-Time Observation:

TYPE_TO_INGEST	1 (See Table 3.2-7 of the SRS)
OB_SUBTYPE	OB_SUBTYPE (See Table 3.2-7 of the SRS)
946702740	OB_TIME (in epoch time format)
LL_MODE	1
LL_FILE	TESTDATA/INGEST/airep.inp
OPEN_MODE	1
NUM_TO_INSERT	1

The following is an example of the inp file data structure required for a batch ingest of a typical Latitude-Longitude-Time Observation:

-2147483648 29122 30.000000 60.000000

where the first value is a place holder, the second value is the numeric ID, the third and fourth values are the observation's lat/lon.

A.2.2 Multi-user Latitude-Longitude-Time Observations Ingest Test Case (4.2.2) Inputs

The multi-user test ingests all of the Latitude-Longitude-Time Observations described in A.2.1. The ingest is executed simultaneously on the HP and Windows NT machines.

A.3 Latitude-Longitude-Time Observation Get By ID Test

A.3.1 Retrieve a Latitude-Longitude-Time Observation with the Get By ID Test Case (4.3.1) Inputs

The GetByID function requires as input the table name for the requested record. Since the table names in the MDLLT database are created dynamically at ingest, no test case files are included for GetByID.

The following is an example of the data structure required for retrieving a typical Latitude-Longitude-Time Observation using the Get By ID:

TEST_TYPE	g (g indicates a GetByID request)
objectid	1 (record ID)
tablename	up98040217 (sample table name)

A.3.2 Retrieve a Latitude-Longitude-Time Observation with the Get By ID Error Test Case (4.3.2) Inputs

There are no GetByID test cases included with MALLT delivery. The user can create an error case by requesting a record or table name that does not exist in the database.

A.3.3 Simultaneous Retrieve of a Latitude-Longitude-Time Observations with the Get By ID Test Case (4.3.3) Inputs

The user may test simultaneous GetById retrievals using the data structure described in A.3.1 on both the HP and Windows NT machines.

A.4 Latitude-Longitude-Time Observation Get By Query Test

A.4.1 Retrieve Latitude-Longitude-Time Observations with the Get By Query Test Case (4.4.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the `/h/MALLT/Integ/TestSuite/TESTDATA/GET` directory on the target platform.

Input Filename	Description
<code>get_99-00</code>	Retrieves records from Dec 99 to Jan 2000
<code>get_airep_time</code>	Retrieves airep records with exact time match
<code>get_all_types</code>	Retrieves all observation types. Requests alternate between GetByQuery and Catalog
<code>get_pirep_TimWindow</code>	Retrieves pireps records within time window
<code>get_rockShip_ll</code>	Retrieves rocket (ship) records within lat/lon window

The following is an example of the data structure required for retrieving Latitude-Longitude-Time Observations using GetByQuery.

TEST_TYPE	s (s indicates GetByQuery)
OB_TYPE	-32768 (wild-card)
OB_SUBTYPE	-32768 (wild-card)
AREA_OF_INTEREST	*(any lat/lon)
TIME	n (n indicates any time will match)
ORIGINATOR_ID	-2147493648 (wild-card)
ORIGINATOR_NAME	- (wild-card)

A.4.2 Retrieve Latitude-Longitude-Time Observations with the Get By Query Test Case, Geographic Area (4.4.2) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the `/h/MALLT/Integ/TestSuite/TESTDATA/GET` directory on the target platform.

Input Filename	Description
<code>get_rockShip_ll</code>	Retrieves observations within lat/lon window

A.4.3 Retrieve Latitude-Longitude-Time Observations with the Get By Query Test Case, Y2K (4.4.3) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the `/h/MALLT/Integ/TestSuite/TESTDATA/GET` directory on the target platform.

Input Filename	Description
get_y2k	Retrieves observations in the Y2K

A.4.4 Retrieve Latitude-Longitude-Time Observations with the Get Test Case, Wild Card (4.4.4) Inputs

There is no test case for the Get By Query using Wild Card. The tester may reference Section A.5.4 for similar test.

A.4.5 Simultaneous Retrieve of Latitude-Longitude-Time Observations using the Get By Query Test Case (4.4.5) Inputs

The multi-user test retrieves all of the Latitude-Longitude-Time Observations described in A.4.1. The Get test driver is run simultaneously at the HP and Windows NT machines.

A.5 Latitude-Longitude-Time Observation Catalog List Test

A.5.1 Retrieve Latitude-Longitude-Time Observations Catalog List using the Catalog Test Case (4.5.1) Inputs

The following files provide the test case data required as inputs. These files and the contents of these files can be found in the `/h/MALLT/Integ/TestSuite/TESTDATA/CAT` directory on the target platform.

Input Filename	Description
get_all_wild	Retrieves a catalog list of all observations
get_y2k	Retrieves a catalog list of observations with time in Year 2000

The following is an example of the data structure required for retrieving one or more latitude-longitude-time observation catalog list.

TEST_TYPE	c (c indicates Get Catalog)
OB_TYPE	-32768 (wild-card)
OB_SUBTYPE	-32768 (wild-card)
AREA_OF_INTEREST	*(any lat/lon)
TIME	n (n indicates any time will match)
ORIGINATOR_ID	-2147493648 (wild-card)
ORIGINATOR_NAME	- (wild-card)

A.5.2 Retrieve Latitude-Longitude-Time Observations with the Get By Catalog Test Case, Geographic Area (4.5.2) Inputs

There is no test case for the Get By Catalog, Y2K. The tester may reference Section A.4.2 for similar test.

A.5.3 Retrieve Latitude-Longitude-Time Observations with the Get By Catalog Test Case, Y2K (4.5.3) Inputs

There is no test case for the Get By Catalog, Y2K. The tester may reference Section A.4.3 for similar test.

A.5.4 Retrieve Latitude-Longitude-Time Observations using the Catalog Test Case, Wild Card (4.5.4) Inputs

The following files provide the test case data required as inputs. These files can be found in the **/h/MALLT/Integ/TestSuite/TESTDATA/GET** directory on the target platform.

Input Filename	Description
get_all_wild	Retrieves a catalog list of all observation records

The data structure is identical as the structure in A.5.1.

A.5.5 Retrieve a Latitude-Longitude-Time Observation with the Catalog Error Test Case (4.5.5) Inputs

There are no GetByCatalog test cases included with MALLT delivery. The user can create an error case by requesting a record or table name that does not exist in the database.

A.5.6 Simultaneous Retrieve of a Latitude-Longitude-Time Observations with the Catalog Test Case (4.5.6) Inputs

The multi-user test retrieves all of the Latitude-Longitude-Time Observations described in A.5.1. The Get test driver is run simultaneously at the HP and Windows NT machines.

A.6 Updating an Existing Latitude-Longitude-Time Observation Data Test

A.6.1 Updating an Existing Observations Test Case (4.6.1) Inputs

The Update function requires as input the table name for the requested record. Since the table names in the MDLLT database are created dynamically at ingest, no test case files are included for Update.

The following is an example of the data structure required for retrieving a typical Latitude-Longitude-Time Observation using the Update test driver:

TEST_TYPE	u (u indicates a update request)
objectid	1 (record ID)
tablename	up98040217 (sample table name)

A.6.2 Updating an Existing Latitude-Longitude-Time Observation using Erroneous Data Test Case (4.6.2) Inputs

There are no Update test cases included with MALLT delivery. The user can create an error case by requesting a record or table name that does not exist in the database.

A.6.3 Simultaneous Updating of an Existing Latitude-Longitude-Time Observation Test Case (4.6.3) Inputs

The multi-user test updates all of the Latitude-Longitude-Time Observations described in A.6.1. The update test driver is run simultaneously at the HP and Windows NT machines. The database can then check to verify that the duplicate Latitude-Longitude-Time Observations have been updated properly.

A.7 Deleting a Latitude-Longitude-Time Observation Data Test

A.7.1 Latitude-Longitude-Time Observation Test Cases (4.7.1) Inputs

A.7.1.1 Latitude-Longitude-Time Observation Delete By ID Test Case (4.7.1) Inputs

The following files provide the test case data required as inputs. These files can be found in the **/h/MALLT/Integ/TestSuite/TESTDATA/DELETE** directory on the target platform. The database can then be checked to verify that the Latitude-Longitude-Time Observation has been deleted.

Input Filename	Description
delUP	Deletes an upper air profile record

The following is an example of the data structure required for retrieving a typical Latitude-Longitude-Time Observation using the Get By ID:

```

TEST_TYPE      d  (d indicates a delete request)
objectid       1  (record ID)
tablename      up98040217 (sample table name)
    
```

A.7.1.2 Latitude-Longitude-Time Observation Delete By Query (purge) Test Case (4.7.1) Inputs

The following files provide the test case data required as inputs. These files can be found in the **/h/MALLT/Integ/TestSuite/TESTDATA/DELETE** directory on the target platform. The database can then be checked to verify that the Latitude-Longitude-Time Observation has been deleted.

Input Filename	Description
Purge_all	Deletes all records in database

The following is an example of the data structure required for retrieving a typical Latitude-Longitude-Time Observation using the Delete By Query (purge):

```

TEST_TYPE      p  (p indicates purge)
OB_TYPE        -32768 (wild-card)
OB_SUBTYPE     -32768 (wild-card)
AREA_OF_INTEREST *(any lat/lon)
TIME           n  (n indicates any time will match)
    
```

ORIGINATOR_ID	-2147493648 (wild-card)
ORIGINATOR_NAME	- (wild-card)

A.7.2 Deleting a Latitude-Longitude-Time Observation using the Delete by ID Error Test Case (4.7.2) Inputs

There are no Delete error test cases included with MALLT delivery. The user can create an error case by requesting a record or table name that does not exist in the database.

A.7.3 Simultaneous Deleting a Latitude-Longitude-Time Observation using the Delete By ID Test Case (4.7.3) Inputs

The multi-user test deletes all of the Latitude-Longitude-Time Observations described in A.7.1. The test driver is run simultaneously at the HP and Windows NT machines. The database can then check to verify that the Latitude-Longitude-Time Observations have been removed.

Appendix B - Latitude-Longitude-Time Observation Segment Expects and Report of Test Results

B.1 Test Results

For the MALLT and MDLLT segments, with the exception of the installation procedures, all testing was conducted with the constructed test cases described in **Appendix A**. It should be clarified that the test cases were developed in conjunction with the test drivers to assist the developers with a variety of fairly realistic data inputs and outputs. As a result of this, the test cases described in this document were continuously updated to ensure the end results matched the expected results. In doing so, the test team worked closely with the development team to verify reasons for test case results that did not match the expected results.

For this reason, the expected results are identical to the planned results when running the final pre-delivery tests. Test drivers and cases were verified on Configuration Managed (CM) HP-UX and Windows NT 4.0 platforms. Discrepancies were documented using a PTR database. Corrected PTRs were again tested in the CM environment to verify that problems or enhancements were properly resolved (Open and closed PTRs are listed in the Software Version Description documents for the MALLT and MDLLT segments).

B.2 Problems Encountered

The only major problem encountered with this series of tests dealt with the test results output for the NT and HP-UX platforms. When running batch processing, the NT and HP systems will execute the test case files in a different sequence. As a result, when reviewing and comparing the output data for each test, the NT system will show the same results as the HP platform but in a different order or sequence.

B.3 Test Case Results

Due to a large amount of output data and results when running the provided test cases in a batch processing mode, the data is provided on a 3.5" floppy disc in a "text" format. Test cases which meet this criteria are annotated in this section.

B.3.1 MDLLT and MALLT Segment Installation Test

Figure B-1 is a graphic example of the Segment Installer on the HP-UX system. Once the MD/MALLT segments are properly installed, the user will see the segments listed in the Currently Installed Segments portion of the Installer window. In addition, the MD/MALLT segments will still be listed in the Select Software To Install portion of the Installer window. In this window the installed segments will have a "*" prior to each name. This denotes that the segment is successfully installed on the HP-UX platform.

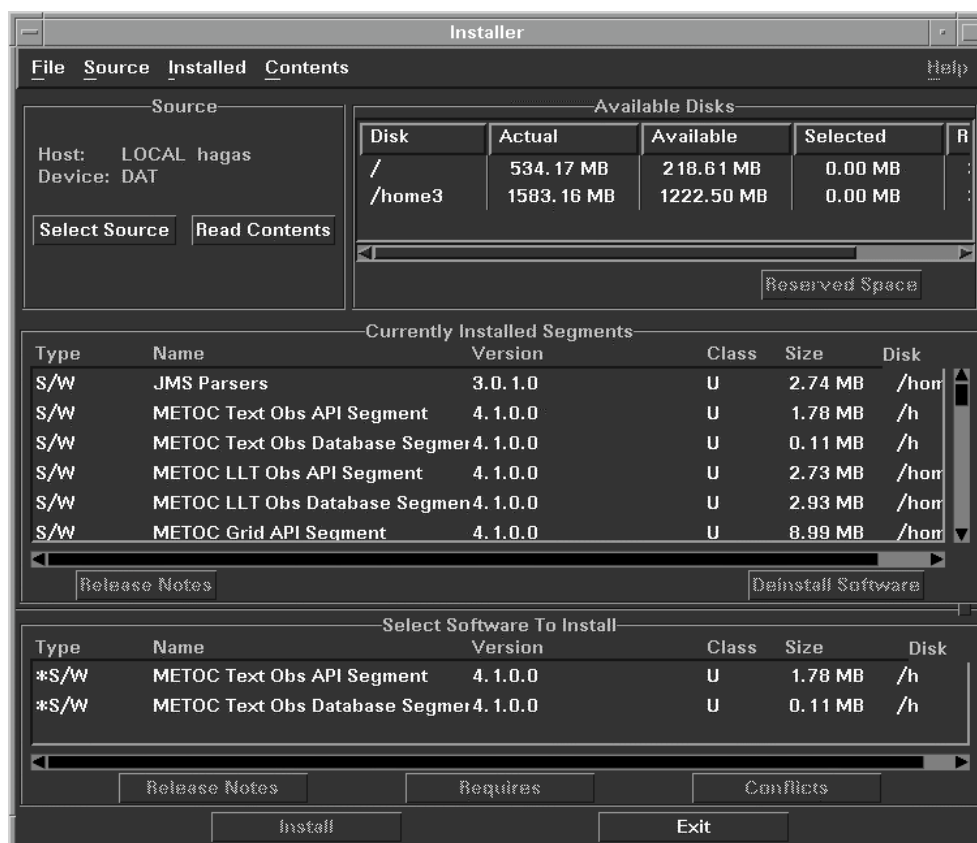


Figure B-1. HP-UX Segment Installer

Figure B-2 is a graphic example of the Install Shield on the Windows 4.0 NT system. Once installed, the Add/Remove Programs Properties window will have the MALLT segment listed in the list provided.

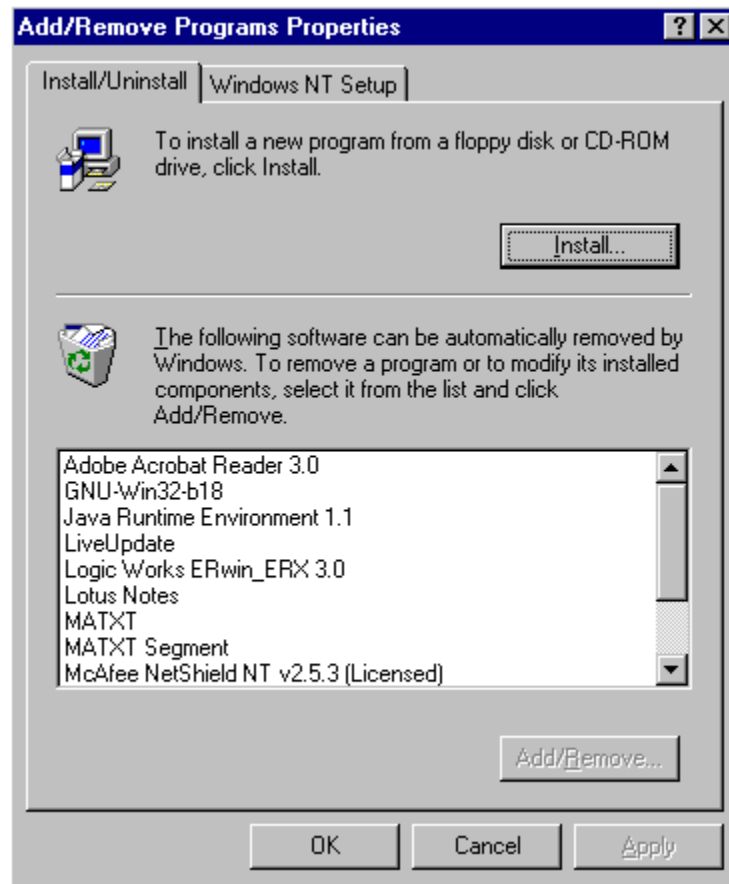


Figure B-1. Add/Remove Programs Properties Window

B.3.2 Latitude-Longitude-Time Observation Data Ingest Test

The test data output and results are provided on the 3.5" floppy provided with this document. The file names are *in_multi.out* and *inlib_all.out*.

B.3.3 Latitude-Longitude-Time Observation Get By ID Test

There are no output files for GetById.

B.3.4 Latitude-Longitude-Time Observation Get By Query Test

The test data output and results are provided on the 3.5" floppy provided with this document. The file names are *getDll_99.out*, *getDll_allTyp.out*, *getDll_rock.out*, *getDll_wild.out*, *getLib_airep.out*, *getLib_pirep.out*.

B.3.5 Latitude-Longitude-Time Observation Catalog Listing Test

The test data output and results are provided on the 3.5" floppy provided with this document. The file name is *Catalog*. The file names are *getDll_wild.out* and *getLib_y2k.out*.

B.3.6 Updating an Existing Latitude-Longitude-Time Observation Data Update Test

There are no output files for Update. Since table names in the MDLLT database are created dynamically at ingest, no test case files are included.

B.3.7 Deleting a Latitude-Longitude-Time Observation Data Delete Test

There are no output files for Delete. The Delete API does not have screen output.